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FEDERAL COMMUNICATIONS COMMISSION
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March 6, 1995

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Mr. William F. Caton
Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
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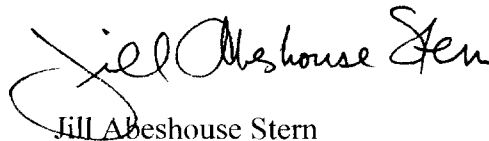
Re: IC Docket No. 94-31

Dear Mr. Caton:

On behalf of CTA Commercial Systems, Inc. ("CTA"), I am transmitting herewith an original and nine copies of its Comments with respect to the Commission's Second Notice of Inquiry in the above-referenced proceeding.

Should there be any questions concerning this matter, kindly communicate with the undersigned.

Sincerely,


Jill Abeshouse Stern

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**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

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OFFICE OF SECRETARY

In the Matter of)
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Preparation for International)
Telecommunication Union World)
Radiocommunication Conferences)

IC Docket No. 94-31

DOCKET FILE COPY ORIGINAL

COMMENTS

Submitted by:

CTA COMMERCIAL SYSTEMS, INC.

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Its Attorneys

March 6, 1995

SUMMARY

At WRC-95, the United States must seek an additional allocation of 7 to 10 MHz of spectrum below 1 GHz to support the proposed U.S. Little LEO systems. As one of five new applicants in the November 1994 NVNG MSS processing group, CTA Commercial Systems, Inc. ("CTA") has a strong interest in assuring that sufficient spectrum is available, on a worldwide basis, to support the proposed systems and the publicly beneficial communication services they will provide. Spectrum allocation at WRC-95 is required if the proposed systems are to be implemented by the year 2000 due to the long lead time for fielding these systems.

Through the ITU working group process, and the Industry Advisory Committee (IWG-2), technical and market analyses have been performed which establish the need for 7 to 10 MHz of spectrum to be allocated at WRC-95. This prior work has also established the relevant selection criteria, the ability of NVNG MSS systems to share with terrestrial fixed and mobile users, and suitable candidate frequency bands.

Building on this previous work, in the next few months, the optimal 7 to 10 MHz of spectrum (preferably between 100 -500 MHz) must be identified in cooperation with NTIA and the private sector users of the bands. This spectrum proposal must be included in the Commission's Final Report with respect to WRC-95. In this effort, the Commission can and should play a major role by facilitating and encouraging discussions among NTIA, NVNG MSS proponents and the terrestrial fixed and mobile users.

At this stage, both government and non-government bands must be considered as candidates. The Commission has previously acknowledged the potential suitability of government

bands for NVNG MSS, particularly the 312-315 MHz and 387-390 MHz bands. These bands are now allocated, on a secondary basis, outside the United States for non-geostationary satellite systems. Moreover, a number of other administrations are in the process of ITU notification/coordination for non-U.S. systems using these bands. Given these developments, it is imperative that the Commission encourage NTIA to engage in an open and immediate dialogue with industry about the potential for shared use of these bands within the United States.

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COMMENTS

CTA Commercial Systems, Inc. ("CTA"), by its attorneys, hereby submits its comments with respect to the Commission's Second Notice of Inquiry ("Second NOI") which seeks comment on preliminary proposals for the 1995 World Radiocommunication Conference ("WRC-95") and future WRCs.^{1/}

I. CTA'S INTEREST IN WRC-95

As a leading manufacturer of small satellites and an applicant for GEMnet, a new satellite system in the Non-Voice, Non-Geostationary Mobile Satellite Service ("NVNG MSS"),^{2/} CTA's interest in WRC-95 is focused upon the need for additional spectrum to support growth of new satellite services. In its August 5, 1994 reply comments in this proceeding, CTA stressed the importance of additional spectrum allocations for satellite services, particularly non-geostationary systems, and identified spectrum scarcity as one of the most significant entry barriers to growth of

^{1/} FCC 95-36, released January 31, 1995.

^{2/} These systems are also referred to as "Little LEO" systems.

the U.S. commercial satellite industry.^{3/} CTA recommended in its previous comments that the United States should place a high priority on obtaining additional global spectrum allocations for LEO satellite services, including additional spectrum below 1 GHz for the NVNG MSS.

CTA has extensive experience in the development and manufacture of small geostationary and low-Earth orbiting communications satellites. Among CTA's twenty-one successful small satellite programs are the two-satellite MACSAT communications satellite program and the seven-satellite Microsat program, both of which were developed for the Defense Advanced Research Projects Agency. The MACSAT satellites were used by the military for store-and-forward communications during the Gulf War. The Microsat program, launched in 1990, used a constellation of seven "lightsats" to provide mobile push-to-talk telephony for the military. CTA's current small satellite projects include a technologically-advanced remote sensing satellite being developed for NASA and a direct broadcast satellite for Indonesia.

Following the opening of a second-round processing window for NVNG MSS applications on November 16, 1994, five companies, including CTA, filed new NVNG MSS applications with the Commission.^{4/} All of these applications have essentially requested to be accommodated in the same frequency bands: 137-138 MHz; 148-149.9 MHz; and 400.15-401 MHz.

^{3/} Reply Comments of CTA Incorporated, IC Docket No. 94-31, filed August 5, 1994 at 3.

^{4/} These applications were filed by Leo One USA Corporation; E-SAT, Inc.; Final Analysis Communication Services, Inc.; GE American Communications, Inc.; Orbital Communications Corporation; and Volunteers In Technical Assistance. In addition, the Commission still has under consideration two first-round applications: Starsys Global Positioning, Inc. and VITA.

If these U.S. Little LEO systems are to be implemented by the end of this century, it is imperative that additional spectrum be allocated at WRC-95. The reality is that the currently allocated NVNG MSS spectrum will only accommodate one additional Little LEO system.^{5/} In addition, accommodation of non-U.S. systems is also a consideration. There are some twenty-five Little LEO systems in the process of being coordinated on a worldwide basis, many of which propose to use the same frequency bands. For these reasons, if the Commission is to authorize all or a substantial number of the qualified Little LEO applicants, and the publicly-beneficial services they will provide, 7 to 10 MHz of additional NVNG MSS spectrum below 1 GHz must be allocated at the upcoming WRC-95.

II. SUMMARY

The Commission should strongly recommend that the U.S. support a spectrum allocation of 7 to 10 MHz of spectrum to non-geostationary MSS at WRC-95. The U.S. should resist efforts to delay allocation until 1997 on the grounds that this delay would push system implementation into the next century, to the detriment of consumers who will potentially benefit from competing service providers and diversity of service offerings. Failure to allocate spectrum at WRC-95 would also adversely affect U.S. leadership in the high technology products and services associated with the Little LEO systems.

The proximity of WRC-95 places a significant burden on the industry, in cooperation with the FCC and NTIA, to work together to identify suitable frequency bands that can be shared with existing services. Through the WRC preparatory process, including Task Group 8/3, substantial

^{5/} See CTA Consolidated Petition to Deny, filed February 24, 1995.

work has been done to develop selection and sharing criteria. Based on these criteria, a number of suitable frequency bands have been identified and work is underway to identify 7 to 10 MHz of spectrum with greater specificity. The FCC should encourage and facilitate an appropriate dialogue between different industry segments and between industry and government in order to identify the optimal government and non-government bands for NVNG MSS sharing.

The Commission should also endorse, as a U.S. position, the removal or revision of technical and allocation constraints on NVNG MSS systems, including RR608A, RR608B, and RR608C as more fully discussed below. In addition to these specific rule changes, CTA supports the phasing out of Metsat operations in the 137-138 MHz band and the generic service allocation in the 149.9-150.05 MHz band, as proposed by IAC and the VGE, respectively.

III. AN ADDITIONAL 7 TO 10 MHZ OF SPECTRUM MUST BE ALLOCATED AT WRC-95 FOR NON-GEOSTATIONARY MSS BELOW 1 GHZ

Consideration of additional spectrum for MSS is an item on the WRC-95 agenda. The filing of additional proposals in the United States and worldwide for new NVNG MSS systems has accelerated the need for allocation of additional spectrum to accommodate these systems. As noted in the Second NOI, a need exists for at least an additional 10 MHz of spectrum.⁶⁷ Two separate, but equally important, issues must be addressed in the Commission's proposals for WRC-95. First, the Commission must vigorously pursue and support the allocation of an additional 7 to 10 MHz of spectrum to the NVNG MSS in frequency bands below 1 GHz to

⁶⁷ See Second NOI at paras. 56-58. See also CPM Report, CPM95/6-E at Chapter 2, Section I, Part D, paragraph 1.1, page 66, as modified by USA CPM-1(Rev.1) ("Given the time required to finance and construct satellite systems, to meet the MSS requirements below 1 GHz, a range of an additional 7 to 10 MHz is required in the near future so that MSS systems may be implemented by around the year 2000.")

support the public need. Second, the Commission must strongly recommend that appropriate spectrum allocations be considered and adopted at WRC-95.

A. The Need For Additional Spectrum Is Well-Documented

Through the WRC-95 preparation process, the need for identification and allocation of additional NVNG MSS spectrum has been well-documented. ITU Task Group 8/3 and industry working group IWG-2 have concluded that 7 to 10 MHz of additional spectrum will be required. CTA has independently confirmed, through its own technical analysis, that 7 to 10 MHz of spectrum below 1 GHz will be required to accommodate all or a significant percent of the U.S. systems that have been proposed.

Since the time that TG 8/3 began to examine the need for new non-geostationary MSS spectrum allocations, additional and more thorough market analyses have been completed. These market analyses demonstrate that the capturable market for non-geostationary MSS services (that is, the number of transceivers that can reasonably be served by non-geostationary MSS providers) will be well in excess of 6 million by the year 2000. More recent marketing studies covering the utility, transportation, e-mail and information management sectors, based on discussions with communications professionals, outside consultants and actual end users, indicate a potential aggregate market substantially in excess of all previous estimates. Specific applications identified include container and trucking tracking, pipeline flow meter reading, utility meter reading, direct to home services, remote paging, HAZMAT facility monitoring, ocean buoy data gathering and intrusion detection. Indeed, allowing for competitive terrestrial and satellite alternatives, the

North American market alone for NVNG-MSS is anticipated to be well in excess of 6 million user terminals by the year 2000. See Exhibit 1.

Exhibit 1 includes an analysis of estimated market demand for Little LEO services compiled by CTA and incorporating market data from other system proponents. The size of the NVNG-MSS market discussed in Exhibit 1 is supported by the growing number of systems that have been proposed worldwide. NVNG-MSS spectrum was first allocated in 1992. Today, there are 25 non-geostationary MSS systems at frequencies below 1 GHz at some stage of notification/coordination before the ITU. An additional five commercial systems proposed in the United States are not reflected in that total. A market of the size reflected in Exhibit 1 is large enough to support many service providers, which will in turn result in lower costs and greater service options for consumers.

B. Spectrum Allocation At WRC-95 Is Required

The WRC-95 agenda contemplates consideration of additional spectrum for MSS. It is now apparent that spectrum must be allocated at WRC-95 if the proposed U.S. systems are to be implemented by the year 2000. Consideration of this issue should not be postponed until 1997. A delay would impede introduction of U.S. systems and inhibit U.S. leadership in satellite technology and services.

Experience suggests that approximately five years is required to fully implement systems after spectrum is allocated. This long lead time is due to many factors. For example, fundamental decisions relating to technology design and development must be made in the early stages of a

project. These decisions cannot be made without identification of specific frequency bands, assurance that spectrum will be available in the specified bands, and a clear understanding of what inter-service and intra-service sharing considerations may apply. The amount of spectrum available and the frequency bands will also determine the number of satellite systems and system subscribers/customers that can be supported. This will have a direct impact on the systems' technical design, business plan and, ultimately, the financeability of the systems. Thus, to meet demand by the year 2000, additional spectrum must be allocated at WRC-95.

IV. SPECIFIC FREQUENCY BANDS MUST BE IDENTIFIED

Identification of specific frequency bands for NVNG MSS should be a high priority. Selection criteria and candidate bands for NVNG MSS allocations have been identified through the ITU working group and IAC processes.

Further work clearly needs to be done in order to identify 7 to 10 MHz of spectrum within the candidate bands. This 7 to 10 MHz need not be contiguous spectrum. Uplink and downlink spectrum may be (and is preferably) allocated in different bands. Ideally, a minimum of 2 MHz band segments (up to 10 MHz) is required for optimal operation and sharing by the proposed U.S. systems.

In the Second NOI, the Commission directs parties to consider both government and non-government spectrum.⁷⁷ CTA and other U.S. Little LEO proponents have undertaken a preliminary analysis of frequency bands that are potentially suitable for the NVNG MSS, and are

⁷⁷ Id. at para. 57.

taking steps to evaluate frequency usage in specific bands in order to determine the optimal allocation in cooperation with government and private users of the relevant bands. As discussed below, the FCC can play an important role in facilitating this dialogue.

A. Selection Criteria

A number of factors must be applied to the selection of frequency spectrum for non-GSO MSS allocations. These include the following.

Worldwide Allocation. In general, the frequency allocation must be useable around the globe in a consistent manner in order for all countries to be able to access this service on an equal basis. NVNG-MSS are inherently global systems in that low earth orbiting (LEO) satellites can provide service almost anywhere on the Earth. It is therefore necessary to acquire allocations that can be used over all ITU regions and not simply in one administration or another.

Frequencies Below 1 GHz. The frequency range is also critical because the market niche for NVNG MSS is low-cost data transmission which largely depends upon the availability of an inexpensive mobile user terminal; the effective frequency bands for NVNG MSS therefore lie between 100 MHz and 1 GHz, with the most desirable bands from a cost and technical standpoint between 100-500 MHz.

The practical lower limit of the spectrum is roughly 100 MHz. Below this point, the high power density of environmental noise and the effects of the magnetosphere preclude low cost, reliable service. The upper end of desirable spectrum is a function of both Doppler shift and transmission power requirements. Doppler shift is an inevitable consequence of LEO satellite

operations where the changing range to the user results in direct change in frequency. At higher frequencies, the amount of Doppler shift increases, adversely impacting the receiver design and cost. In addition, since NVNG-MSS operations typically use low cost omni directional antennas, the use of higher frequencies results in the need to supply higher output power levels for a given error rate. Based on these considerations, the practical upper frequency limit for desirable MSS operations is 500 MHz.

Inter-service Sharing. The most important single criteria for frequency selection is that the mobile satellite service be able to share with the existing users in allocated bands without unacceptable interference to or constraining growth of existing users. Bands that are currently allocated to both fixed and mobile services are potentially suitable. An allocation of co-primary status is important for the provision of these services and, by using sharing techniques and appropriate coordination procedures, will allow successful coexistence with current types of uses.

The sharing ability of non-geostationary MSS systems has been documented in theoretical studies and actual field tests. For example, the conclusion that NVNG MSS systems can effectively share with terrestrial users is supported by recommendation ITU-R M.1039 (Method for Evaluating Sharing Between Stations in the Mobile Service Below 1 GHz and FDMA Non-geostationary Satellite Orbit (Non-GSO) Mobile Earth Stations) and Recommendation ITU-R M.1087 (Method for Evaluating Sharing Between Systems in the Land-Mobile Service and Spread-Spectrum LEO Systems in the MSS Below 1 GHz.)

Narrow band FDMA systems use frequency agile band scanning techniques to find open channels prior to transmission. The channel is occupied for just the duration of the transmission and then released. In this manner, interference with active users is avoided. Similarly, harmful interference is prevented by wide band, spread spectrum systems which have the ability to spread the signals over wide amounts of spectrum, resulting in very low interference levels for any particular narrow band channel. Typically, NVNG MSS is used for the transmission of small amounts of data. At the data rates in use, the duration of the transmissions is brief, which also minimizes the use of the spectrum. This combination of channel avoidance, brief message lengths, and low output power density permit sharing of spectrum with many existing users.

Potential sharing studies have shown that bands with high power emitters, continuous transmissions, aeronautical navigation, or safety services may not be the best candidates for additional MSS spectrum. However, those bands that are characterized by intermittent use, such as fixed and mobile services with push-to-talk users, have the appropriate characteristics for sharing with NVNG-MSS operations.

B. Suitable Frequency Bands

Based on these selection criteria, the following bands have been identified as suitable candidates for sharing:

1. 152.855 - 156.2475 MHz and 157.1875 - 173.2 MHz

These bands are allocated to FIXED and MOBILE in Regions 1, 2 and 3, and allocated in the U.S. to non-government LAND MOBILE on a primary basis. The FCC designates this spectrum as Private Land Mobile, Maritime and Auxiliary Broadcasting. It is used mainly by public and private systems for communications networks for railroads, power utilities, police radio, highway maintenance crews, forestry, and even oil spill cleanup frequencies. These fixed and mobile users are typical intermittent users which use is ideal for the NVNG MSS service. This band could be used most effectively in the space-to-Earth direction.

2. 216 - 218 MHz and 219 - 220 MHz

These bands are allocated to Maritime Mobile in Region 2, to Fixed, Mobile and Broadcasting in Region 3 and to Broadcasting in Region 1. In Region 2, this band is used by the Automated Maritime Telecommunications System ("AMTS") for inland waterway transportation primarily focused on the Mississippi River, its tributaries and the Puget Sound. The use of this band is limited geographically and the number of receivers has been static at around 2000. Given this use, it is possible that non-geostationary MSS systems could share this band with the AMTS in Region 2. Further analysis must be undertaken to determine sharing scenarios in Regions 1 and 3.⁸

⁸ In addition, 225-235 MHz and 390-399.9 MHz have been identified as potentially suitable for MSS operations, subject to concurrence of existing U.S. government and NATO users. See IWG-2, Candidate Bands for Additional Allocations, appended to Second NOI.

3. 312-315 MHz and 387-390 MHz

These bands are allocated to FIXED and MOBILE systems on a primary basis worldwide, and WRC-92 added the Mobile Satellite service with a secondary allocation by footnote 641. In the U.S. this band is reserved for government FIXED and MOBILE use. With the progress made in sharing with fixed and mobile systems these bands should be considered a prime candidate for a co-primary allocation to MOBILE SATELLITE with coordination required under Resolution 46 in lieu of Article 14. It is currently being used by at least one non-U.S. LEO MSS system. This six megahertz would be an ideal allocation for the non-geostationary MSS and is already in use on a secondary basis outside the U.S.⁹

4. 450-460 MHz

This entire band is allocated to FIXED and MOBILE in Regions 1, 2 and 3.¹⁰ In the U.S., this band is used primarily by a variety of private mobile services radio. U.S. footnote 87 allows 500 kHz for government and non-government space telecommand under certain conditions within the 450-451 MHz band. The bursting nature of the NVNG MSS systems shows that effective sharing of this band with the typically intermittent (e.g., push-to-talk) transmissions of existing users is possible.

⁹ The Commission should reject TIA's suggestion that the 380-399.9 MHz band be allocated for public safety applications. This reallocation would conflict with and could preclude potential NVNG-MSS operations. In addition, the 387-390 MHz band is allocated to MSS on a secondary basis outside the U.S. and, as discussed herein, CTA believes that this band is a strong candidate for shared use in the U.S. for NVNG MSS downlinks.

¹⁰ The 450 - 451 MHz and 455 - 456 MHz band is also allocated to Auxiliary Broadcasting.

5. 470-512 MHz

This band is allocated to non-government BROADCASTING and LAND MOBILE (primary), and Fixed and Mobile (secondary) in Region 2, to BROADCASTING in Region 1, and FIXED and MOBILE in Region 3. NVNG-MSS systems employing wide bandwidth (approximately 3 MHz) spread-spectrum signals can effectively use this band in both the space-to-Earth and the Earth-to-space directions without interfering with VHF television broadcasting signals. Six MHz in each direction would support at least four additional NVNG-MSS systems to operate without interference to existing broadcasting and fixed and mobile systems in the band. Narrow band systems have the potential of sharing this band, by operating their uplinks in vacant broadcast channels selected through the use of band scanning techniques.

C. Both Government And Non-Government Bands Must Be Considered

In the Second NOI, the Commission indicates that, because of the difficulty of agreement on proposals involving government allocations, the focus should be on non-government (priority two) bands. While CTA and other U.S. LEO proponents expect to consider the suitability of non-government bands, there must be an equivalent willingness on the government's part to supply information allowing for meaningful consideration of government bands. CTA believes that the government's willingness to engage in an open dialogue is a prerequisite to identifying spectrum where sharing is feasible. The Commission must assist the private sector in focusing

NTIA's attention on this important spectrum issue, and not allow the discussion to be limited only to non-government frequency bands as NTIA would prefer.

Consideration of the 312-315 MHz and 387-390 MHz bands, in particular, must be included in this proceeding or in a separate domestic rulemaking proceeding. NTIA itself has requested that the FCC consider the issue in the WRC-95 proceeding. Attached hereto as Exhibit 2 is a memorandum from NTIA to the FCC in which NTIA asked the Commission not to consider a rulemaking petition submitted by CTA, raising the issue of amending the U.S. Table of Allocations consistent with the International Radio Regulations.^{11/} NTIA there urged the Commission to address the spectrum allocation matter in the WRC proceeding:

It is noted that the issue of identifying additional spectrum to support the non-geostationary satellite systems in the mobile-satellite service is being dealt with in the preparation for the ITU 1995 World Radio Conference (WRC 95).

NTIA believes that it would be inappropriate to deal with this issue in a separate proceeding from the WRC 95 effort . . .^{12/}

The Commission deferred to NTIA noting that "the Commission has the 312-315 MHz and 387-390 MHz bands under consideration for MSS use in the WRC-95 proceeding" and inviting CTA to file comments to the Second NOI.^{13/} Leaving aside the issue of whether the domestic allocation issue can be considered in a separate rulemaking, it is highly inconsistent for

^{11/} At the 1992 World Administrative Radio Conference, a new footnote 6.4.1A was added which provides that the bands 312-315 MHz and 387-390 MHz may also be used by non-geostationary satellite systems. Final Acts of the World Administrative Radio Conference at 16. See Exhibit 3.

^{12/} See Exhibit 2.

^{13/} Letter from Richard M. Smith, Chief, Office of Engineering and Technology, dated February 17, 1995.

NTIA to argue that the issue should only be considered in the WRC-95 proceeding and then seek to foreclose discussion in that proceeding.^{14/}

It bears emphasis that the Commission has previously found, in its August 1994 Preliminary Spectrum Report to Commerce Secretary Brown, that sharing may be feasible in the 312-315 MHz and 387-390 MHz bands and that such sharing would increase the amount of spectrum available to NVNG MSS by 120% and relieve congestion in the VHF/UHF bands.^{15/} In addition, the United States cannot ignore this issue which is likely to be raised by other countries at WRC-95. As of August 1994, a total of 7 systems from 3 administrations were proposed in the 312-315 and 387-390 MHz bands, one of which is proceeding through coordination and six have been advanced published. These non-U.S. systems will potentially be allowed to move forward, to the detriment of competing U.S. systems.

In the Commission's Preliminary Spectrum Reallocation Report to Commerce Secretary Brown, the Commission indicated that the WRC-95 proceeding "presents an opportunity to act" on discussions between the FCC and NTIA with respect to use of the 312-315 MHz and 387-390 MHz bands for MSS. The Commission further concluded in the August 1994 Report that: "Despite the complex use of this band for Government operations, as discussed in the Preliminary Report, the benefits of reallocating spectrum might be found to outweigh those needs."^{16/} Although the Report recommends "prompt action to allow non-Government access to this band,"

^{14/} The issue of modifying the U.S. Table of Allocations to be consistent with the International Table (Footnote 641A) can properly be considered outside the WRC context. CTA expects to seek reconsideration of the Commission's February 17, 1995 decision not to allow for initial comments on whether CTA's rulemaking petition should be considered further.

^{15/} Preliminary Spectrum Reallocation Report, FCC 94-213, released August 9, 1994, at 25.

^{16/} Id.

to date, the government has resisted efforts to engage in any meaningful dialogue on the subject frequency bands with the private sector.

For the above reasons, the Commission should consider spectrum allocation proposals involving government frequency bands and encourage NTIA to engage in open discussions with the private sector in an effort to identify appropriate bands where sharing is feasible.

V. TECHNICAL AND ALLOCATION CONSTRAINTS SHOULD BE ELIMINATED AS PROPOSED

A. Technical Constraints

The technical constraints imposed on MSS mobile earth terminals operations in the 148-150.05 MHz band by RR608A and RR608B have been shown by the ITU TG 8/3 and the IAC to be impractical and unnecessary. CTA fully supports Proposal No. 2/L-LEO 148-150.05 that the current PFD limit of -150 dB (W/m²/4 kHz) should be replaced with the coordination triggering mechanism as identified in ITU-R Document 8-3/TEMP/45-E (Geneva).

B. Allocation Constraints

The Commission should endorse IAC's recommendation to require phasing out of Metsat operations in the 137-138 MHz band. The existing allocation constraints within the 137-138 MHz band narrowly segments this band and reduces the capability of MSS operators to effectively service their customers. With the convergence of DOD and NOAA MetSat programs, and possible collaboration with European programs, it is possible to migrate the current MetSat

users into other spectrum that provides clear bands for their use. This will allow clear and unencumbered use of the 137-138 band for MSS below 1 GHz, resulting in the greatest benefit to the public. The change in allocation for MetSat coprimary status through 2006 and secondary status through 2010 permits ample time for existing MetSat users to plan for and implement the desired changes. CTA therefore supports Proposal No. 2/L-LEO 137-137.825.

CTA also supports the proposal that 149.9-150.05 MHz be allocated to MSS generically. Generic allocations of MSS will result in broader use, wider range of services, and lower cost to the MSS users. The restrictions of "land mobile use" in the 149.9-150.05 MHz band unnecessarily denies MSS services for both maritime and aeronautical services. CTA concurs with the VGE that service allocations be made as broadly as possible and that the 149.9-150.05 MHz band be allocated on a general basis as proposed.

CTA agrees with the IAC that RR608C should be eliminated. This restriction is needed in light of recent sharing techniques identified in TG 8/3 which evidence the inherent sharing abilities of FDMA and spread spectrum MSS systems.^{17/} In addition, the VGE is attempting to eliminate country specific recommendations. Now that there has been a further opportunity to evaluate the sharing capabilities of MSS and terrestrial services, the restrictions of RR608C (which essentially reduce MSS co-primary status in the 148-149.9 band to secondary in specific countries) are not required. CTA therefore supports efforts to eliminate RR608C.

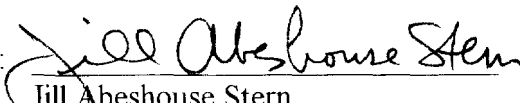
^{17/} See CPM Report, CPM-95/6E at 10.

VI. CONCLUSION

For the foregoing reasons, CTA urges the Commission to recommend that the United States (1) seek allocation of an additional 7 to 10 MHz of spectrum at WRC-95 for non-geostationary mobile satellite service below 1 GHz; (2) remove or revise radio regulations that inhibit beneficial NVNG MSS use by the public.

Respectfully submitted,

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Its Attorneys

March 6, 1995

137800

EXHIBIT 1

Market Demand for NGSO MSS Data Services Below 1 GHz

An assessment of the market demand for NGSO-MSS data services below 1 GHz is essential to defining the requirements for spectrum. Since the time that Task Group (TG) 8/3 reported on the need for additional NGSO-MSS spectrum allocations, more recent and comprehensive market analyses have been completed that supplement the conclusions of TB 8/3. While it was originally suggested that the capturable market for NGSO-MSS services would be about 6 million in North America by the year 2000, it is now clear that this early estimate was very conservative.

More recent marketing studies have analyzed this market and have found that the market exists in a number of segments that can be represented as:

- Utility Monitoring: Monitoring of remote electric, gas, and water systems.
- Transportation Asset Monitoring: Monitoring of mobile shipping, land and sea vehicles
- E-mail/Paging: One and two way messaging for normal and emergency communications.
- Information Management: Acquisition and verification of remote sensor systems and consumer services.

Based on discussions with industry leaders, communications professionals, end users, and government officials, these studies indicate that a much larger aggregate market exists. The results of one study are presented below to indicate the scope of the market.

Market Demand for LEO Satellite Data Services

	U.S. Market Size		
	Total	%Capture	LEO Users
Utility			
Electric	200,000,000	10%	20,000,000
Water	80,000,000	10%	8,000,000
Oil Wells/Pipeline	2,000,000	10%	200,000
Gas	1,000,000	10%	100,000
Transportation			
Trucks	1,800,000	25%	450,000
Trailer	3,900,000	25%	975,000
Shipping	500,000	10%	50,000
Pleasure Boats	20,000,000	5%	1,000,000
Automobile/Theft Recovery	160,000,000	5%	8,000,000
Containers	880,000	20%	176,000
E-mail/Paging	20,000,000	10%	2,000,000
Information Management			
Buoys	5,000	25%	1,250
Field Sensors	80,000,000	25%	125,000
Direct TV/Credit Verification Services	2,000,000	25%	3,750,000
Total	505,585,000		44,827,250